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ABSTRACT

Suggesting that students in the primary grades can explore the world around them and practice valuable skills in spelling, reading, writing, communication, and language, this book presents cross-curricular units on intriguing animals that reach diverse needs by working through emotional memory, deductive reasoning, and multiple intelligences. Features of the book include: ready-to-use activities; sample reading texts; group demonstrations; and classroom-tested teaching suggestions. Each unit includes an introductory narrative, advice on using the theme, related language arts and extension activities, a list of trade books, and class activities. The first unit, "Dino of Land-Long-Ago," builds on the notion that dinosaurs fascinate children of all ages. The second unit, "The Animal that Builds Its Own Environment," helps children learn about beavers. Appendixes contain advice on setting up and running a learning center; advice on how to make and use bulletin boards and file folders; a 47-item glossary; instructions on how to make a book; and 10 teacher resources. (RS)

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LANGUAGE ARTS THEME UNITS

CROSS-CURRICULAR ACTIVITIES FOR PRIMARY GRADES

INTRIGUING ANIMALS

- DINOSAURS
- BEAVERS

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THE FAMILY LEARNING ASSOCIATION

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The Family Learning Association
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Bloomington, Indiana

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Table of Contents

Introduction to the Series v

Unit 1: *Dino of Land-Long-Ago*

I. Introduction: How the Theme Can Interest Students 2
II. Targeted Ideas 2
III. Making Connections 2
IV. The Unit Theme: An Introductory Narrative
How Scientists Study These Amazing Creatures 3
V. How to Use the Theme: Questions, Sample Text: *What Happened To Patrick's Dinosaur?*, Science & Math Demonstrations, More Books for Student Response 5
VI. Related Language Arts Activities 8
VII. Related Extension Activities:
Team Projects: *fossil prints, murals, mobiles, diorama*
Field Trips: *natural history, archeology museums* 9
VIII. Trade Books 10
Activities 11
Suggestions for Teachers 16

Unit 2: *The Animal That Builds Its Own Environment*

I. Introduction: How the Theme Can Interest Students 18
II. Targeted Ideas 18
III. Making Connections 18
IV. The Unit Theme: An Introductory Narrative
How Beavers Adapt and Survive 19
V. How to Use the Theme: Questions, Sample Text: *Beavers Beware*, Science Demonstrations, Other Useful Books 21
VI. Related Language Arts Activities 24
VII. Related Extension Activities:
Team Projects: *plays, maps, beaver lodge, conservation*
Field Trips: *man-made dam, lumberyard* 25
VIII. Trade Books 26
Activities One — Five 27
Answer Keys (Activities One — Five) 32
Activities Six — Ten 33
Answer Keys (Activities Six — Ten) 38

Appendices

Appendix A: Learning Centers 42
Essential Supplies for Learning Centers 45
Learning Center Activities 46
Learning Center Checklist 47

Appendix B: Bulletin Boards and File Folders 48

Appendix C: Glossary 50

Appendix D: How to Make a Book 53

Appendix E: Teacher Resources 54

Introduction To The Series

Cross-Curricular Theme Units

This series presents instructional units on themes typically taught in the primary grades. Cross-curricular, multi-faceted learning is at the heart of these units.

Though the topics focus on science, math, social studies or literature, we use language arts skills consistently in each unit. Listening, speaking, reading, and writing activities show children that no matter what content they learn, they will increase their effectiveness through the communication skills that lead them through these units of study.

Encourage your students to discover through play and observation, then to share ideas and surprises with you or with other students. We remind you to integrate all of the language arts while students watch their guinea pig or follow the progress of a box turtle.

> Writing needs to be a significant part of every unit. Take dictation from non-writing students, to show them how to act like a writer. Have students regularly write their own books, make picture books, and write the text that will help them share their knowledge.

Each unit in this series uses as many frames of mind or intelligences as possible. Howard Gardner (*Multiple Intelligences, 1993*) lists seven frames of mind and the activities that work with them:

- Literary: stories, poems, rhymes;
- Logical-mathematical: numbers, counting, graphing, logic;
- Bodily-kinesthetic: physical activity, games, acting-out;
- Visual/spatial: art, theatre, reading, writing, producing;
- Musical: songs, rhythm, listening, instruments;
- Interpersonal sociological connection to others: speaking, listening, sharing;
- Intrapersonal psychological connection with one's self: reflection, metacognition, feelings, and internal discourse.

Give your students a chance to express themselves across this range of intelligences by following the guidelines in each unit.

How to Use These Theme Units

This book offers you:

- ☛ Ready-to-use theme-oriented units that integrate the language arts across the science and social science curricula;

- Ways to connect the units meaningfully with a required curriculum;
- Unit goals that focus your day on enjoyable student-centered experiences;
- stimulating "grabbers" from children's literature, which will elicit child involvement;
- sample questions to pose about the readings;
- a wealth of resources that can lead you wherever your particular situation demands.

This book also gives you many choices for expanding each unit theme into a cross-curricular learning adventure. So you can readily:

- use the Appendices to create multimedia learning cetners featuring a computer, audiotapes, library books, and an area for writing and artwork;
- find ways to build on children's prior knowledge, thus reinforcing their confidence for further explorations;
- develop more learning strategies from the springboard of these units.

The units in each volume work well together for an extended exploration of the volume topic. Or they may use them separately and independently. In either case, you have the opportunity to expand your students' vocabulary, knowledge, and skill. Speaking of vocabulary, in *Appendix C* you will find a *Glossary* that defines our use of terms. Several other *Appendices* give you more detail on the activities cited in these lessons. After selecting an instructional unit and pulling together the necessary materials, we suggest the following procedure:

1. Read or paraphrase Part IV, the *Introductory Narrative.*
2. Ask your students to share their knowledge on the topic.
3. Read the book recommended in Part V. 2., to enrich the students' understanding of the theme.
4. From the options listed, select the activities that will best involve your students. You may want to ask the children to select the activities that suit them.
5. Toward the end of your study, you may choose any or all of the activity pages to reinforce the knowledge or skills that you are highlighting.

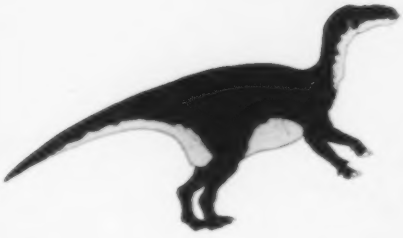
You may reproduce and distribute the *Activity pages* as needed. You may also want to distribute the *Introductory Narrative*, so your students can read along or read it independently.

We suggest that you build learning centers that have artifacts, books, games, activity sheets, illustrations, and other materials that expand and enhance the theme of each unit. You can find ideas for learning centers in the Appendix.

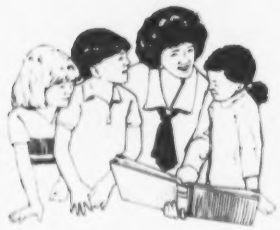
Creative minds will find numerous ways to turn these units into delightful and profitable learning experiences.

Unit I:

Dino of Land-Long-Ago

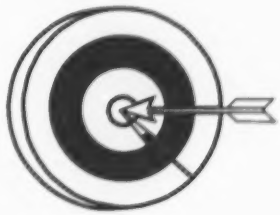


I. Introduction: How the Theme Can Interest Students



Dinosaurs fascinate children of all ages. Even before Barney became part of our life, children would look at models and pictures of dinosaurs and could name the different types. Students will bring a lot of knowledge to this unit. You will need to check on the accuracy of this information. Most children will have fun with this unit.

II. Targeted Ideas



- There are many different types of dinosaurs.
- Dinosaurs are herbivores, carnivores, or omnivores.
- Dinosaurs use parts of their bodies for protection.
- Scientists believe that some animals living now may have evolved from dinosaurs.

III. Making Connections

You may want to discuss why dinosaurs couldn't live in today's cities, taking information from Volume V, Unit 2, *SAFARI DOWN MY STREET*. Compare dinosaurs with today's animals during this unit or when studying Volume V, Unit 3, *COUNTRY COUSINS*. Unit 1 of Volume VI, *FROM FIELD TO FEAST*, will help students understand why we can't get food as the dinosaurs did.

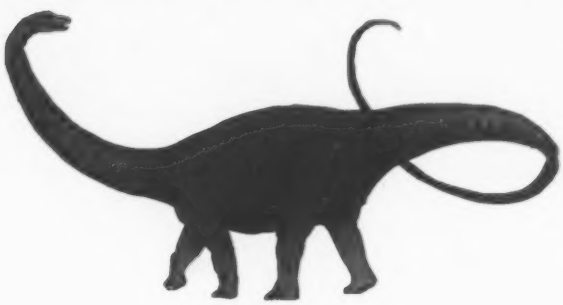
IV. The Unit Theme: An Introductory Narrative to Read to Students

How Scientists Study These Amazing Creatures

Long ago strange animals lived on earth. They lived where the land was warm and wet, with many trees, plants, and water. These animals of ages past were *dinosaurs*. There are many different kinds of dinosaurs.

Dinosaurs could be small or very large. Some ate meat; others ate plants. Many would stand on their hind legs and reach up into the tall treetops to eat the leaves. They had plenty to eat in the forests at that time. Some who walked on all four legs had very long necks to reach up into the trees. They had many flat teeth to grind the food.

Do you know how big these dinosaurs were? The ***brontosaurus*** was as



long as three school buses. It walked on four legs and ate plants near the water. Its skin was smooth but very muscular, and Bronto had a long tail.

The ***stegosaurus*** was very large, and had thick skin and a spiked tail. It used that tail like a weapon when other dinosaurs wanted to fight. Stego also ate plants in the forest.

Another plant eater was old ***triceratops***, with horns on his head. A large flat bone covered his neck. This dinosaur was smaller than Bronto or Stego, but its horns served as protection. Its tail was much shorter, but it was thick and muscular. Tricera ate grass-type plants because its legs were close to the ground.

Some of the meat eaters were the ***tyrannosaurus rex***, ***ornitholestes***, and ***allosaurus***. All meat eaters had very sharp teeth for chewing. And they had strong hind legs for running. Their front legs were short with pointed claws. They used these claws to tear apart their meat.

Old Rex was the largest meat eater, standing taller than a two-story house. This animal feared no other living thing, but other dinosaurs feared Rex. I would stay out of his way, too.

IV. The Unit Theme: An Introductory Narrative to Read to Students (cont.)

Ornitho was very small, about as tall as your mother or dad. It was little, but it could run very fast. It ate smaller animals that flew and crawled, and tried to stay away from Rex.

The allosaurus was not as small as the ornitholestes, but it was very vicious. It had a large head and a very long, strong tail, and was so brave that it would catch dinosaurs three times its size for a whopping dinner. But I bet even Allo stayed away from the tyrannosaurus rex.

All these dinosaurs lived for a very long time. But something terrible happened. Scientists think the Earth changed and caused them to die. Many places became dry and cold. The plants and animals living then became extinct. That means they died out, and no more are alive today.

Imprints

Do you know how scientists learned about the dinosaurs? They found huge bones buried in the earth. These bones had become hard as rock, or *petrified*. These scientists put the bones together, and the assembled skeletons show us the dinosaurs of long ago.

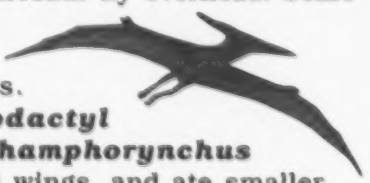
Scientists also studied footprints left in the ground by the beasts. They lived in wet, muddy land, and their heavy weight left large foot imprints. The depth of the footprints gave an idea of the dinosaur's size. If the footprint was very deep, researchers knew the body had to be huge. A small body would make a shallow imprint.

Stranger Yet

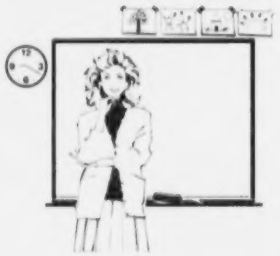
There are many other interesting dinosaurs. The biggest one is ***Brachiosaurus***. Standing over five stories high, it is as long as three school buses. But its size can fool you. In spite of how Brach looks, it is just a tree nibbler, and it doesn't look very scary, like Old Tyro Rex.

As big as Brach was, another dinosaur was as small as a chicken: the ***Compsognathus***. Compso ate plants and tiny animals, and was not very vicious. In fact it had to be a good runner to avoid the bigger guys.

Imagine looking into the sky and seeing a dinosaur fly overhead. Some of these old guys had wings. The ***Pterodactyl*** and the ***Rhamphorynchus*** had clawed wings, and ate smaller animals. They did not fear the huge land dinos, as they could fly away into the trees. But the smaller animals were terrified of Pterod and Rhamp.



V. How to Use the Theme: Procedures for Demonstrating its Functions and Involving Children



1. Questions to Pose About the Narrative

These sample questions are just a start; they may lead you to others that will help students focus on the essential information in this unit.

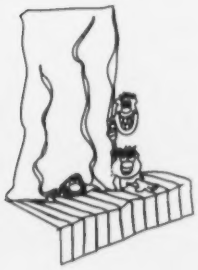
1. How did dinosaurs protect themselves from other dinosaurs?
2. Why did some dinosaurs have long necks?
3. What are some differences among types of dinosaurs?
4. Why did dinosaurs become extinct?
5. If dinosaurs were living today, how might our lives be different?

2. Listening to Literature: A Sample Text and How to Use it

Carrick, Carol. *What Happened To Patrick's Dinosaur?*

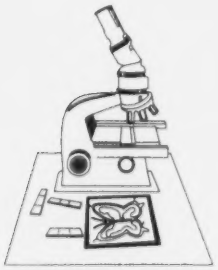
Patrick's older brother talks about dinosaurs during a visit to the zoo. This makes Patrick afraid until he discovers that they all lived about 65 million years ago, before there were any humans on the Earth. Then Patrick invents an imaginary explanation for why dinosaurs became extinct.

Options for Student's Response



1. As you read, ask for predictions about the story. Ask students what they think a dinosaur is. Write responses in a Web on the board. Where do they think they came from ? Then discuss the differences between real and make-believe stories. Explain that the story you are reading is a very imaginative one.
2. Use Think-Pair-Share for student discussion about the book? Could any of it be true?
3. How did the people treat the dinosaurs? Were they fair?
4. How did the dinosaurs help the people? List some of the ideas.
5. What kind of cars did the dinosaurs make for the people? Did they need gas stations? Why, why not?
6. Why did the dinosaurs decide to leave? What would you have done? How did they go?
7. After the reading, let students select activities:
   a. Divide into groups. Make a mural about part of the story as told by Patrick.
   b. Pretend you can visit the dinosaurs in Patrick's imaginary tale. How would you treat them? Tell a friend.
   c. Make a diorama about these imaginary dinosaurs. Write a short story about your diorama. Share it with the class.

3. Science Demonstrations



1. Make "fossil" models using stones and shells.
2. Study about different bones, teeth, and footprints of dinosaur fossils.
3. Study eating habits of various dinosaurs.
4. Make a pictorial time-line of the appearance and disappearance of dinosaurs.
5. Research dinosaur habitats.
6. Use a world map to locate areas where dinosaur bones have been found.
7. Use a **grid** to draw scale sizes of the dinosaurs.

4. Math Demonstrations

1. Make a Dino-Size Pictograph.
2. Compute the time in thousands of years between the onset of different dinosaurs and their disappearance.
3. Plot points on graph paper to form the shape of a dinosaur. Copy the ordinal numbers that represent each point.
4. Make up word problems about dinosaurs. Enter them on dino-shaped cards to use at a math center. Work with a buddy to compute each problem. Use answer cards for self-checking.
5. Measure your own height. Compute how many of you it would take to equal the length of the Brachiosaurus from head to tail.
6. Break into groups. Go outside and measure the corresponding lengths of different dinosaurs:

Diplodocus	90 feet	Tyrannosaurus Rex	50 feet
Brachiosaurus	80 feet	Plateosaurus	20 feet
Apatosaurus	65 feet		

Graph these measurements.

5. More Books for Response

1. Ahlberg, Allan. *Dinosaur Dreams*

Three skeletons enter each other's dreams about dinosaurs.

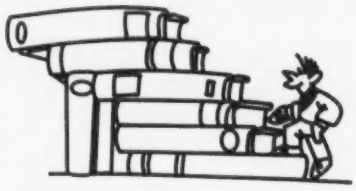
2. Oram, Hiawyn. *A Boy Wants a Dinosaur*

Alex doesn't want an ordinary pet, he wants a dinosaur for his very own.

3. Richler, Mordecai. *Jacob Two-Two and the Dinosaur*

When Jacob Two-Two's father brings him back a small lizard from Kenya, it grows into an enormous Deplodocus. To protect him from grown-ups, Jacob runs away with him to British Columbia.

VI. Related Language Arts Activities



1. Listening and Discussion

- Share selected stories about dinosaurs with the class.
- Invite a scientist to speak to the class.
- Have students listen to peer stories and poems.

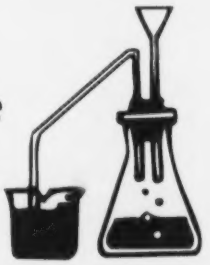
2. Individual and Group Writing

- Write and illustrate a Dino Fact Book. Include habitats, food sources, sizes, etc.
- Write a skit about a boy or girl in dino-land.
- Put facts you collect about different dinosaurs in a Learning Log.
- Write and illustrate a Dino Big Book. Share it with a younger group of children.

3. Reading

- Have students look through books and examine pictures of dinosaurs. The can begin to compile their own "Dinosaur Fact Book" and work on it throughout the unit. This activity can be a class project or each student can compile an individual book.
- Have students discuss a book you have read, referring to the ideas they jotted down as you read.
- Read one of the other trade books listed on page 10 and have students discuss it.

VII. Related Extension Activities: Using Language Arts to Teach Science in Personal or Small Group Work



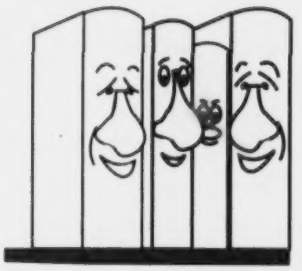
1. Individual and Team Projects

- Display numerous pictures of dinosaurs and their habitats. Elicit interest by viewing a picture, then making a web of everything that the students notice.
- Have students make "fossil prints" with rocks, shells, and their own hands. Add these prints to the class mural habitats.
- Present skits to the class.
- Read Aliki's *Fossils Tell of Long Ago*. Make a fossil mobile.
- Make a mural of Dinosaur Land.
- Build a class-size dinosaur diorama.

2. Class Field Trips

- Visit the Museum of Natural History.
- Visit museums to study fossils.

VIII. Trade Books



Non-Fiction

Aliki. *Digging up Dinosaurs*

_____, *Dinosaur Bones*

_____, *Dinosaurs Are Different*

_____, *Fossils Tell of Long Ago*

Arnold, Caroline. *Dinosaurs All Around*

Barton, Byron. *Dinosaurs, Dinosaurs*

Branley, Franklyn. *What Happened to the Dinosaurs?*

Curtis, Neil. *Fossils*

Dixon, Dougal. *Hunting the Dinosaur and Other Prehistoric Animals*

Freeman, Russell. *Dinosaurs and Their Young*

Kaufman, John. *Flying Giants of Long Ago*

Lauber, Patricia. *Dinosaurs Walked Here*

_____, *The News About Dinosaurs*

Lauber, Patricia. *Living With Dinosaurs*

Raup, David M. *The Nemesis Affair: A Story of the Death of Dinosaurs and the Ways of Science*

Sattler, Helen. *The Illustrated Dinosaur Dictionary*

Simon, Seymour. *The Largest Dinosaurs*

_____, *New Questions and Answers About Dinosaurs*

Fiction

Ahlberg, Allan. *Dinosaur Dreams*

Blackwood, Mary. *Derek the Knitting Dinosaur*

Cauley, Lorinda. *The Trouble with Tyrannosaurus Rex*

Donnelly, Liza. *Dinosaurs' Christmas*

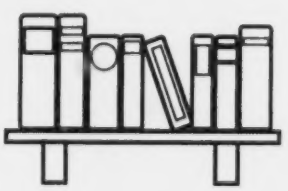
_____, *Dinosaurs' Halloween*

Fleischmann, Paul. *Time Train*

Martin, Rodney. *There's a Dino in the Park!*

Nolan, Dennis. *Dinosaur Dream*

Oram, Hiawyn. *A Boy Wants A Dinosaur*



NAME _____

VOCABULARY WORDS: dinosaur, Brontosaurus, Stegosaurus Triceratops, Tyrannosaurus Rex, Allosaurus, Ornitholestes

DIRECTIONS: Use the Introductory Narrative and the vocabulary terms to complete the vocabulary puzzle below.

1. I have thick skin and a thick tail.

   _____

2. A large flat bone covers my neck.

   _____

3. I am the largest, meanest, meat eater.

   _____

4. I am as long as three school buses.

   _____

5. I am not the smallest meat eater, and I am very vicious.

   _____

Keep a DINO LOG. Use the pictures in the theme story.With each picture, write what you have learned about each dinosaur. What does each dino eat? How does each dino protect itself? How does each dino walk?

ACTIVITY 2

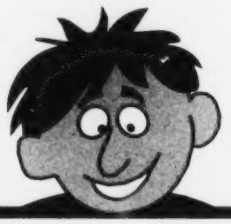
NAME _____

DIRECTIONS: Make fossil prints of shells, rocks, and your own hands using plaster of paris. After you have made your prints, set them outside on newspapers to dry. When they dry, use them to compare and contrast different sets of prints.

VENN DIAGRAM: Pick two shells and two rocks; then discuss with a buddy what is the same and what is different about each one. Make a Venn diagram showing your conclusions.

MURAL PRINTS: With tempera paints and styrofoam dishes, use the shells and rocks to make fossil prints. Draw scenery around each print to create a picture.

DIORAMA: Build a diorama based on your "fossil" print scenes. Attach your ***I CAN SEE*** frame to the diorama.



Use the *I CAN SEE* frame to write about your fossil prints.

I can see fossils _____

They remind me of _____

One of them looks like _____

and _____

My scene has _____

and _____

I can see Dino _____

He has _____

My Dino's name is _____

NAME _____

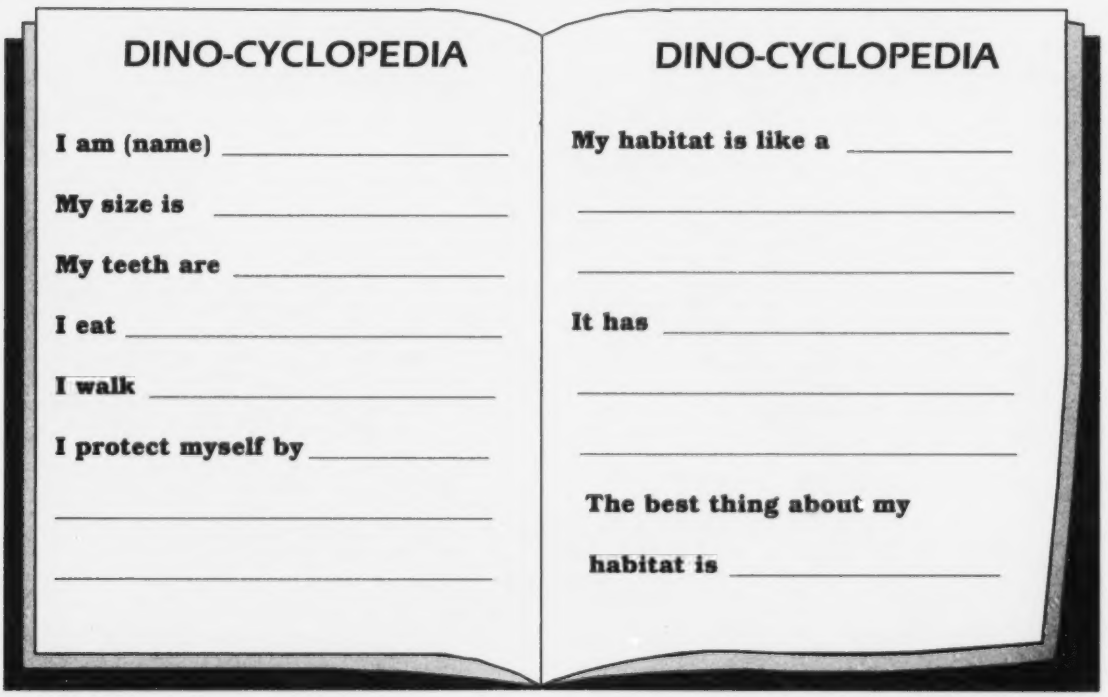
DIRECTIONS: Using the books about fossils, complete the chart.

BONES tell SIZE OF DINOSAUR	TEETH tell DINOSAUR FOOD	FOOTPRINTS tell HOW DINOSAURS WALKED

NAME _____

DIRECTIONS: Use the pictures of Brachiosaurus, Compsograthus, Pterodactyl, and Thamphorhynchus to build a diorama that includes these dinosaurs.

Do a research project on a particular dinosaur, using the resources your teacher provides for you. Record the data you collect in the Dino-Cyclopedia.



ACTIVITY 5

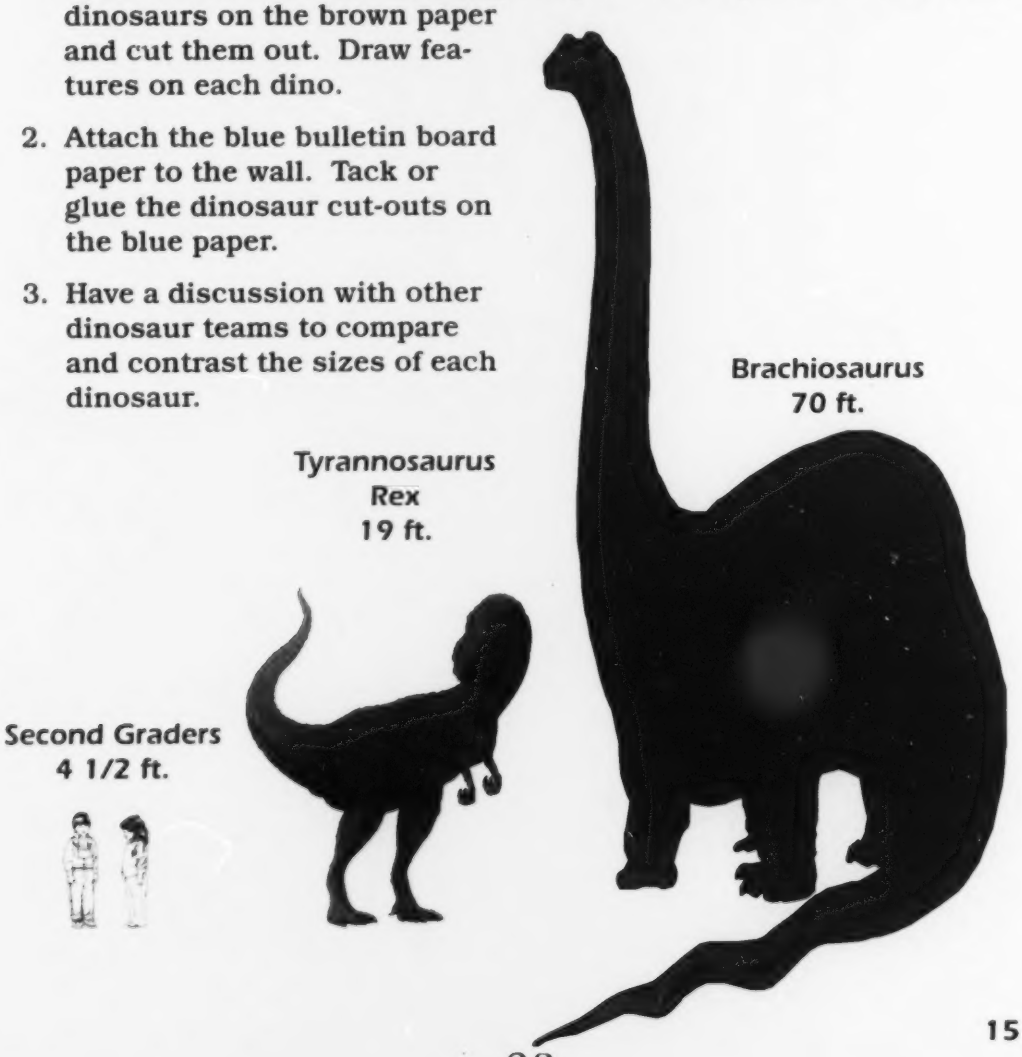
NAME _____

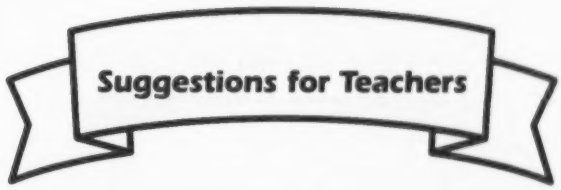
DIRECTIONS: Use pictures that show the sizes of different dinosaurs compared to children's sizes. Transfer these sizes to a class pictograph. Use estimation to create the pictograph to size.

MATERIALS: Brown bulletin board paper, scissors, blue bulletin board paper, tacks or glue.

Pictograph Groups:

1. Team up with a couple of buddies, and have each team make a certain kind of dinosaur, using the pictures as patterns. Draw the dinosaurs on the brown paper and cut them out. Draw features on each dino.
2. Attach the blue bulletin board paper to the wall. Tack or glue the dinosaur cut-outs on the blue paper.
3. Have a discussion with other dinosaur teams to compare and contrast the sizes of each dinosaur.





Activity 1

1. Stegosaurus; 2. Triceratops; 3. Tyrannosaurus Rex;
4. Brontosaurus; 5. Allosaurus.

Create Dino-Log sheets for students to take notes. Add to these pages as they gather more information. The Vocabulary puzzle in Activity 1 provides instant knowledge application about specific dinosaurs. You can use the puzzle individually or you can write the items on the board and have the students respond to them through discussion and journaling in a Dino Log.

Activity 2

1) Set up tables with the necessary supplies to make shell and rock fossil prints. Rotate the students around to the paint center to make the fossil scenery pictures. Work with each group or student to complete the ***I CAN SEE...*** frame.
2) Use a Venn Diagram to record students' comments when comparing/contrasting shells and rocks.
3) Have students create the Class Mural of fossil prints as a continuing project. They can paint scenery and dinosaurs on a mural if you allow a large enough sheet of bulletin board paper.
4) Pair students to create Diorama scenes of their fossil print pictures.

Activity 3

After reading books about fossils, help students complete the organizer in Activity 3. For example: Bones tell us the length and height of dinosaurs. Teeth tell us what kind of food they ate. Footprints tell us how they walked. Use students' ideas.

Activity 4

1) Set up mini-research centers around the room. Provide cue-cards that include page, paragraph, and line for specific answers. For instance: pp. 32, P3, L2.
2) Provide copies of the *DINO-CYCLOPEDIA* for each child. Students will use this book to record data found at the mini-research center.

Activity 5

This directed activity will take more than one day. Make sure that each child is involved. As the dinosaur patterns are ready to be placed on the blue bulletin board paper, measure each one and write the measurement scale on the pictograph.

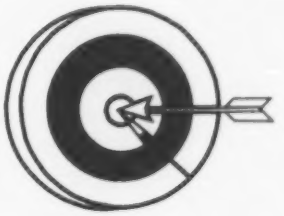
Unit 2:

The Animal That Builds Its Own Environment

I. Introduction: How the Theme Can Interest Students

This unit helps children learn about the *beaver*, an animal with fascinating characteristics. Imagine the children's excitement when they learn that this animal sees with its eyes closed! They will also enjoy seeing how its ears fold for protection and its nose closes when it dives into water. You will want to use pictures and a cross-section drawing of a beaver to highlight these unusual features. The beaver's distinctive self-built habitat further distinguishes it from other animals.

II. Targeted Ideas



- The beaver is a rodent.
- The beaver's use of its senses show us the importance of ears, noses, and eyes.
- The beaver uses its tail for protection.
- While the beaver is a mammal and spends most of its time on land, it is an expert in the water.
- The beaver has an unusual home.

III. Making Connections

This unit relates well to the one on the guinea pig, another rodent, in Volume III. The beaver shares with the whale (also in Volume III) the trait of holding its breath under water. And when you discuss breathing, you might bring in the first unit in Volume I of this series, *OUR INVISIBLE CLOAK, THE AIR*. The fourth unit there, *A POND IS NOT A PUDDLE*, may also suggest a comparison of habitats.

IV. The Unit Theme: An Introductory Narrative to Read to Students

How Beavers Adapt and Survive

The beaver is North America's largest rodent—namely, an animal that gnaws with its teeth. It has four large chisel-like teeth in front of the cheek teeth used to chew food. The two top teeth get a firm grip and the bottom teeth do the gnawing. They can gnaw through a six-inch tree in fifteen minutes. It's a good thing the beaver has such handy teeth, for they are its tools. Beavers need these tools to build their own environments. An environment is the place where living things live.

The beaver's teeth resemble all rodents' teeth, but its tail is unique. It is flat and shaped like a paddle. Leathery scales and a few coarse hairs cover this tail. When enemies approach, the beaver uses its tail to slap the water as a warning that danger is near. The noise sounds like a pistol shot, audible for half a mile. When swimming, the beaver uses its tail like a boat's rudder. When it sits up to gnaw a tree, it can sit on this tail like a stool. The paddle-like tail also helps to balance beavers when they carry mud or wood in their front paws.

The beaver is a swift swimmer, but it is slow and clumsy on land. For this reason it must live near water for a quick getaway and for its family's protection. The beaver's family is called a colony. The environment that beavers make for their colonies is a pond. They make these ponds by chewing down trees and branches, and laying them across water to form a dam. A dam holds the water, so it will not flow downstream like a river. The dam causes the water to get deeper as it backs up, forming a pond: the beaver's home.

When the logs and branches cover the water, they need something to hold them in place. Just as bricks and cement may hold your house together, the beaver uses mud to seal the sides of the logs. This mud seal keeps the water

IV. The Unit Theme: An Introductory Narrative to Read to Students (cont.)

from running through the logs and washing them away.

Beneath the dam the beaver burrows tunnels and builds a shelf, raised up from the water, to provide a dry home, called a lodge. When danger approaches or winter ice covers the pond, the beaver and its colony can stay in this underground lodge.

The Eyes, Ears, and Nose

When you close your eyes, everything becomes dark because the eyelid covers the part of your eye that sees. Did you know that a beaver can see through its eyelids? They are transparent. With these special eyelids the beaver can swim quickly through deep water yet still see clearly. Even on land beavers close their eyelids when they chew on wood. These special eyelids become safety goggles, protecting the beavers' eyes from flying splinters.

When you swim you may use earplugs to keep water from running into your ears. So does the beaver. As soon as it dives, its outer ears fold shut to close the ear opening and keep water out. These folds are called earflaps.

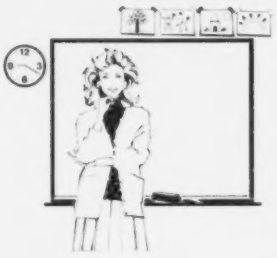
How can you keep water from getting into your nose when you dive? You can get noseplugs that look like small clothespins, but they are not comfortable. Our beaver friend has flaps of skin on its nose that close when it goes under water. These noseflaps keep water out of the beavers' lungs, so they won't drown.

Did you know that the beaver

wears long underwear? Its fur covering has a thick mat of soft underfur about an inch long. Long, heavy guard-hairs two to three inches long cover this layer.

Beavers spend a lot of time combing through this fur with their paws. They use their paws to coat the fur with oil that comes from a gland in their bodies. This oil waterproofs the beaver's skin, so it never gets really wet. The guard hairs and the oil make a suit of long underwear that protects the beaver's skin like a diver's wet suit.

V. How to Use the Theme: Procedures for Demonstrating its Functions and Involving Children



1. Questions to Pose About the Narrative

These sample questions are just a start; they may lead you to others that will help students focus on the essential information in this unit.

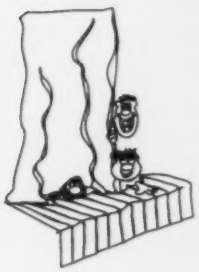
1. Why does the beaver build its home under water?
2. How does the beaver protect itself?
3. How does the beaver build its home?
4. What are the beaver's physical characteristics?
5. Why does the beaver need eye coverings when it goes into water and chews on wood?
6. How does the beaver keep its fur in condition for swimming?
7. Why does the beaver need to protect its nose when diving?

2. Listening to Literature: A Sample Text and How to Use it

Benner, Barbara. *Beavers Beware*

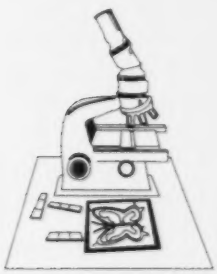
Each morning the children who live in a house on the river see more sticks piled on their dock. Two beavers are cutting down trees and building a lodge there.

Options for Student's Response.



1. Display pictures of beavers. Write down observations that students note with each picture.
2. Beaver lodges seen in the pictures are in ponds or streams. Ask students what would happen if they used some people's dock for a lodge site.
3. Read the book to the class. Ask students to discuss findings and make predictions.
4. Ask students to free-write about episodes in the book.
5. Have students write a continuation of the story. What happened to the beavers after the storm broke the dock loose? Take statements and make a class story continuation.
6. Pair students to illustrate the new ending.

3. Science Demonstrations



1. Bring in goggles and protective glasses for children to use.
2. Spread oil/Vaseline on a cloth and dip it in water. What happens to the cloth?
3. Make a table of the beaver's characteristics.
4. Compare teeth and claws with human tools.
5. Use a Venn diagram to compare the beaver lodge with other animal habitats.
6. Use toy boats with a rudder in a water table.

4. More Books for Response

1. Minarik, Else. *Percy and the Five Houses*

None of the five different houses Percy receives from the House of the Month Club proves to be as perfect as his own beaver home.

2. George, William and Lindsay. *Beaver at Long Pond*

As the other animals at Long Pond settle down for the night, Beaver leaves his lodge, begins searching for food, and starts his nightly adventure.

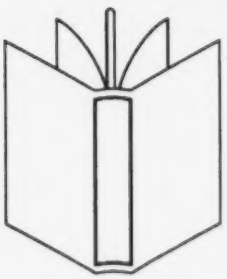
3. Miles, Miska. *Beaver Moon*

An old beaver searching for a new home locates an abandoned lodge and sets out to make it his own.

4. Pryor, Bonnie. *The Beaver Boys*

Adventures of Mama and Papa Beaver and children Choppery, Woody, and Baby Wilhelmina.

5. Other Useful Books



Add your own favorite titles that are relevant to this unit.

1. _____

Summary:

2. _____

Summary:

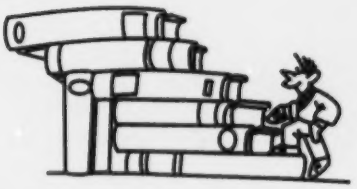
3. _____

Summary:

4. _____

Summary:

VI. Related Language Arts Activities



1. Listening and Discussion

- Discuss the long-distance swimmer's use of oil.
- Invite a speaker from the zoo.
- Listen to stories about the beaver.
- Listen to stories about dams made by humans: what have we learned from the beaver?
- Listen to taped stories or poems.

2. Individual and Group Writing

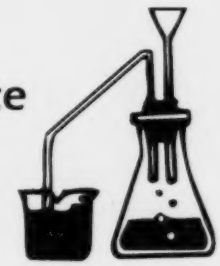
- Write a Fact/Picture Book.
- Keep a description journal.
- Write a newspaper about beavers.
- Write an acrostic poem:

B
E
A
V
E
R

3. Reading

- Have students read any of the trade books with a buddy.
- In small groups, students can take turns reading sections of stories. The others can then comment or ask the readers questions.

VII. Related Extension Activities: Using Language Arts to Teach Science in Personal or Small Group Work



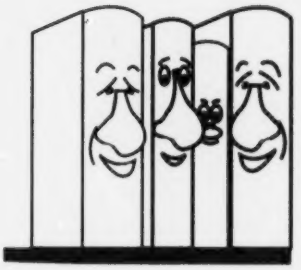
1. Individual and Team Projects

- Present a play that students have written about a beaver.
- Pass out books about beavers; ask students to discuss what they see.
- Create a map showing the location of the beaver's dams.
- Make a mural showing beaver dams and lodges.
- Build a beaver lodge.
- Build a dam in a water table.
- Make a collage of the beaver's habitat and characteristics.
- Study how water conservation endangers the beaver.

2. Class Field Trips

- Take a trip to a dam. Have students ask an official there about what the dam does, how it affects the surrounding land, and what the dam officials do.
- Visit a lumber yard to see how wood gets processed for building. Have students compare this human activity with the beaver's house-building techniques.

VIII. Trade Books

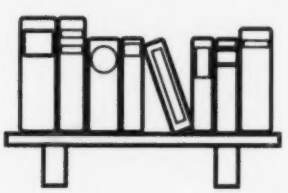


Non-Fiction

Butterworth, Christine. *Beavers*
Crump, Donald. *Creatures Small and Furry*
Dabcovich, Lydia. *Busy Beavers*
George, William and Lindsay. *Beaver at Long Pond*
Hogan, Paula. *The Beaver*
Lane, Margaret. *The Beaver*
Raedel, Margit. *Castor: A Day in the Life of a Beaver*
Rue, Leonard. *Meet the Beaver*
Ryden, Hope. *The Beaver*
Stone, Lynn. *Beavers*

Fiction

Brenner, Barbara. *Beavers Beware*
Buffet, Guy. *The Secret of Beaver Valley*
Burgess, Thornton. *Paddy the Beaver*
Fisk, George. *Benny the Lazy Beaver*
Grandma Marian. *Beni the Bashful Beaver*
Kalas, Sybille. *The Beaver Family Book*
Michaels, Ski. *Fun in the Sun*
Miles, Miska. *Beaver Moon*
Minarik, Else. *Percy and the Five Houses*
. *The Beaver Boys*



ACTIVITY 1

NAME _____

VOCABULARY WORDS: eyelids, transparent, safety, noseplugs underwear, earflaps, splinters

DIRECTIONS: Four of the words in the list are COMPOUND WORDS. Find them and write them below. Then write the two words that make up each compound word.

Example: raincoat = rain + coat

1. _____ = _____ + _____
2. _____ = _____ + _____
3. _____ = _____ + _____
4. _____ = _____ + _____

Use the CLUES to find each of the MYSTERY WORDS
Write each word in the puzzle.

- ➜ Covers for the eyes
- ➜ See-through
- ➜ Tiny pieces of wood

1.

	Y					

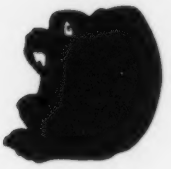
2.

	R							E		

3.

S								

ACTIVITY 2



NAME _____

VOCABULARY WORDS: eyelids, goggles, safety, earflaps, splinters

DIRECTIONS: Using some of the vocabulary words, finish each sentence below.

1. _____ keep water out of the beaver's ears while he swims.

2. When you swim, you can wear _____ to cover your eyes.

3. They are called _____ goggles because they protect your eyes.

4. The beaver's eyes are protected by see-through _____.

5. See-through eyelids protect the beaver's eyes from flying wood _____ .

ACTIVITY 3

NAME _____

DIRECTIONS: **Use your IMAGINATION to answer this question. What would happen if the beaver did not have see-through eyelids?**

When the beaver gnaws a tree _____

_____

_____

_____

_____

_____

When the beaver swims under water _____

_____

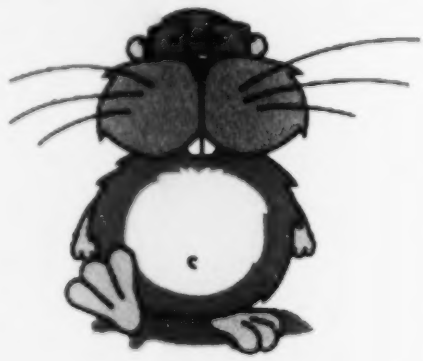
_____

_____

_____

_____

DRAW a beaver on a piece of construction paper. Pretend that it is your own pet. Be sure to add a stream and some trees in your picture. Give your beaver a name.



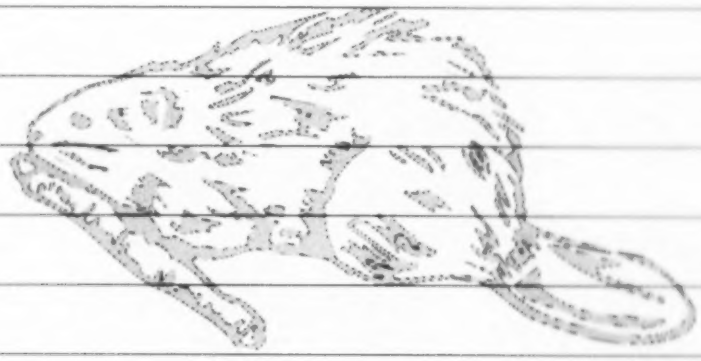
ACTIVITY 4

NAME _____

INTERESTING FACTS:

The beaver does not really wear underwear. But under the top layer of guard hairs, it has shorter soft fur against its skin just like your underwear is against your skin. And, this fur is covered with oil. Just as oil keeps water from soaking into wood, this oil keeps water from getting to the beaver's skin. So the skin is waterproof.

DIRECTIONS: Now that you have a pet beaver, it would be fun to write a story about it. Remember to use the name that you chose and some of the things that you have learned about beavers.



ACTIVITY 5

NAME _____

DIRECTIONS: Pretend that your beaver can talk. What questions would you ask it? Pick one of your questions and make up a funny answer. REMEMBER to use QUOTATION MARKS (" ") when you or the beaver is talking.

Answer Key

ACTIVITIES ONE – FIVE

Activity 1

1. noseplugs = nose + plugs
2. underwear = under + wear
3. eyelids = eye + lids
4. earflaps = ear + flaps

Activity 2

1. earflaps
2. goggles
3. safety
4. eyelids
5. splinters

Activity 3

Possible answers: When the beaver gnaws a tree, ***its see-through eyelids close to protect it from flying spinters.*** When the beaver swims under water, ***its eyelids close to keep the water out, but it can still see.***

Activity 4

Accept all students' individual stories.

Activity 5

Accept student ideas, but make sure that quotation marks have been used correctly.

ACTIVITY 6

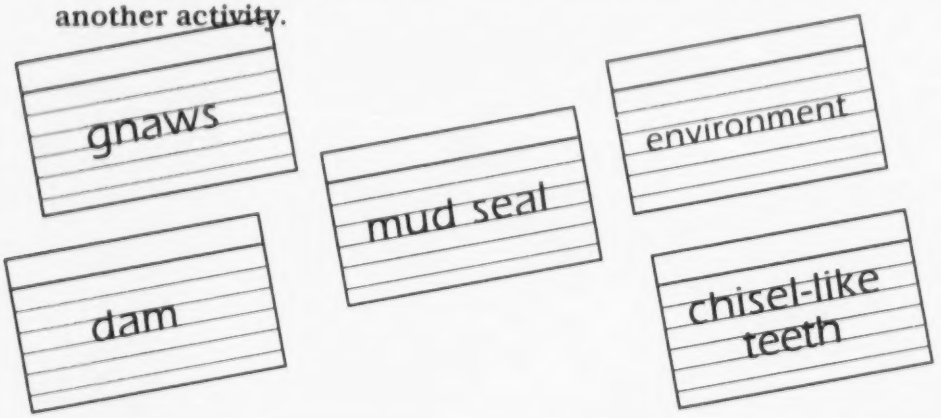
NAME _____

VOCABULARY WORDS: gnaws, chisel-like teeth, environment, mud seal, dam

DIRECTIONS: Draw a line to connect each vocabulary word to its meaning.

1.	**environment**	very sharp teeth, like tools
2.	**chisel-like teeth**	a place where living things live
3.	**gnaws**	a wall that blocks out water
4.	**dam**	a covering to hold out water
5.	**mud seal**	chews on something

Get a 3" x 5" card from the teacher. Make word cards of the vocabulary words that are shown here. You will use these for another activity.



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ACTIVITY 7

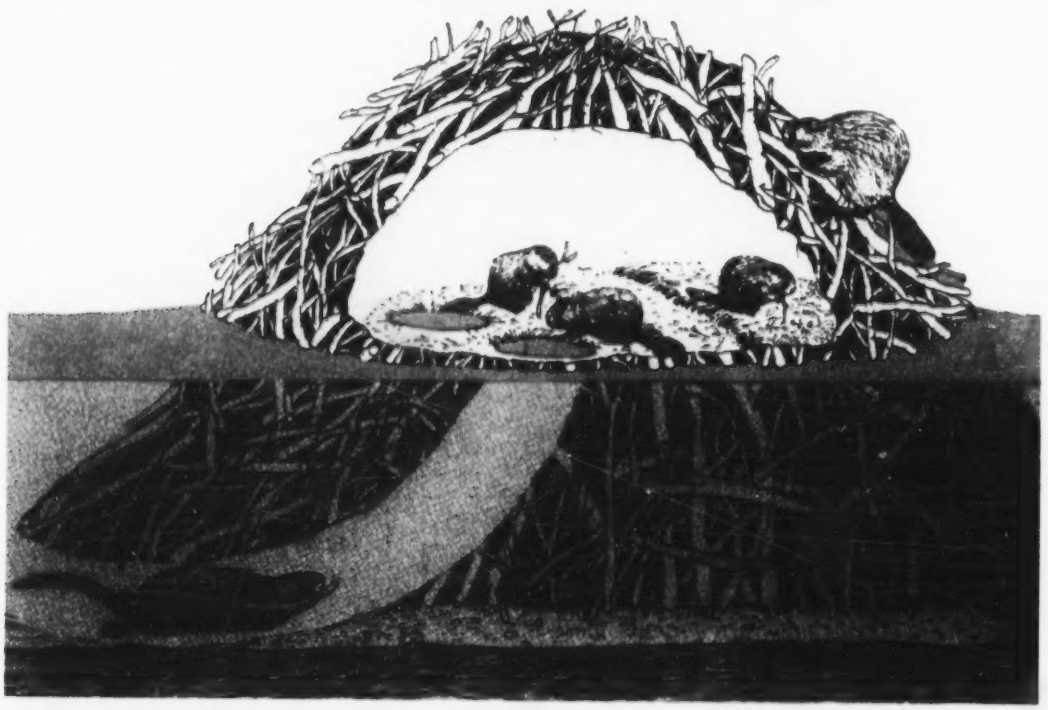
NAME _____

VOCABULARY WORDS: lodge, colony, mud seal, shelf, tunnel, pond, burrow

The beaver has burrowed two tunnels from his lodge to the water. He is busy finishing the home for his colony, or family. Find each thing in the picture and draw a line to connect it.

lodge **colony** **mud seal** **pond**

two tunnels **shelf** **beaver carrying wood**



ACTIVITY 8

NAME _____

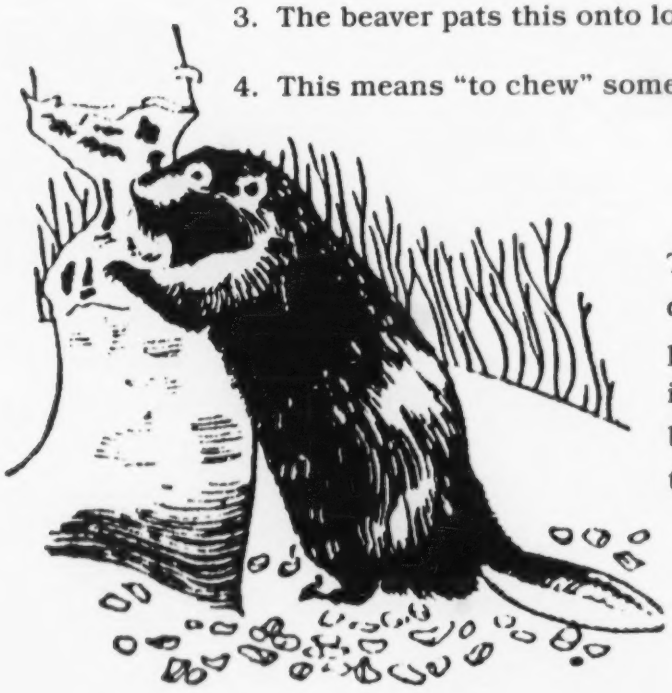
DIRECTIONS: Get a large piece of construction paper from the teacher. Then follow these instructions.

1. Fold the paper in half, lengthwise.
2. Fold the paper in half, top to bottom.
3. Draw lines on the creases.
4. Number each box, with numbers 1-4.

ACTIVITY: Lay out the word cards in front of you, and listen while the teacher reads clues about the beaver. Pick the word that answers the clue, and put the card in the numbered box on your construction paper.

CLUES:

1. The beaver builds this to hold back the water.
2. These tools help the beaver gnaw wood.
3. The beaver pats this onto logs to seal out water.
4. This means "to chew" something.



This is a beaver chewing down a tree. Color this picture. Later you will cut it out to make a large beaver environment picture to keep.

ACTIVITY 9

NAME _____

DIRECTIONS: MATCH the pictures to each statement. Write each number by the picture that matches.

1. This is used to gnaw wood.

2. These are used to carry wood and to pat mud into place.

3. This is used to give a warning signal.

4. This is what the beaver builds to hold back water.

After you have matched the pictures, discuss what you did with your teacher. Then color all the pictures, cut them out, and make a large beaver environment on construction paper. Label each thing, or write a story to attach to the bottom of your environment picture.

NAME _____

DIRECTIONS: Finish the story about Bernard Beaver. Use the information that you have learned about a beaver's life.

TROUBLE FOR BERNARD

Bernard Beaver is a long way from his pond. This distance could be very unsafe for him because _____

_____

_____

_____

The best thing that Bernard can do is to _____

_____

_____

_____

In the pond, _____

_____

_____

_____

_____

_____

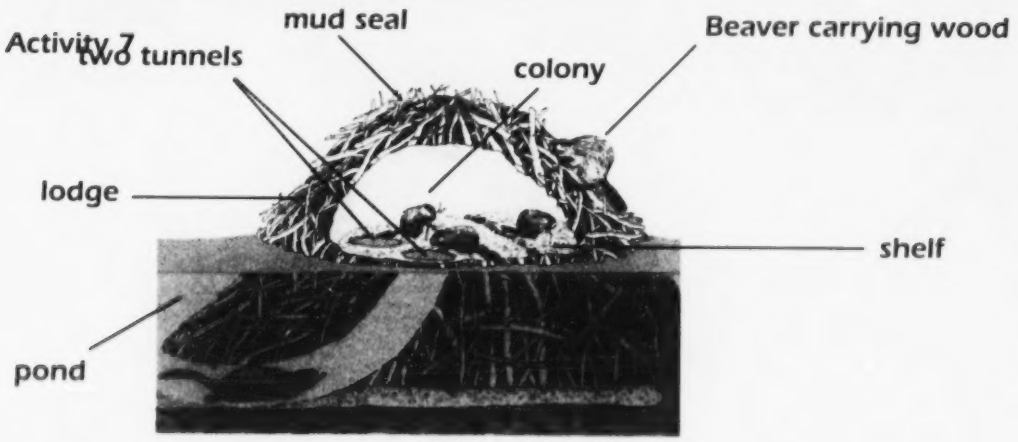
Answer Key

ACTIVITIES SIX – TEN

Activity 6

1. environment: a place where living things live.
2. chisel-like teeth: very sharp teeth, like tools.
3. gnaws: chews on something.
4. dam: a wall that blocks out water.
5. mud seal: a covering to hold out water.

Activity 7



Activity 8

BOX 1: dam; BOX 2: chisel-like teeth
BOX 3: mud; BOX 4: gnaw

Activity 9

1. teeth; 2. paws; 3. tail; 4. dam

Activity 10

Possible response for *Trouble for Bernard:*

Bernard Beaver is a long way from his pond. This distance could be very unsafe for him because ***he is slow on land and faster animals could catch him.*** The best thing that Bernard can do is ***to hurry home to his pond.*** In the pond, ***Bernard can swim fast and get away from danger.***

Appendix
A - E

APPENDIX A

LEARNING CENTERS

You may set up many independent or peer activities in special learning areas of the classroom. Identify each center by subject or purpose. For instance, a Science Center will contain materials for students to engage in experiments or gathering content information. A Reading Center engages students in reading activities.

How to Use Learning Centers

Learning Centers need to provide easy access and directions, so your students can use them successfully. Recorded directions help students who are not yet fluent readers. You can color-code some activities for easy access. The *Red Files* may contain activities for the students who are visual learners. The *Blue Files* may contain activities for those who learn best by listening.

Many unit activities are ready-made for Learning Centers. You can put the Activity Pages and lists of other activities in file folders there. Students can do these projects at the Learning Centers, either individually or with a buddy.

Scheduling Learning Center Time

The teacher must plan Learning Center time. One effective schedule places students at Centers on a rotation basis. While some students are with you for instruction, conference time, or reading/writing assignments, others pursue theme activities at a Learning Center. Here's a sample schedule:

8:15-8:45	Attendance, daily plans, sharing	10:15-10:30	Storytelling or free reading
8:45-10:00	Reading groups; other students in Learning Centers, or engaged in writing activities	10:30-11:15	Math groups; other students in Learning Center, or engaged in writing activities
10:00-10-15	Morning break	11:15-11:45	Lunch

You can plan a similar breakdown for the afternoon schedule. Try to schedule a 45-minute slot just for Learning Centers. You can circulate among those in the Centers to do some on-the-spot teaching as questions arise.

Management and Quick-Fixes

You must train your students to use Learning Centers efficiently. Allow no more than four or five students at a center at one time. Make sure that each student understands directions for activities placed there. Rotate jobs for each participant, so that the center can run itself. Jim may be the task master on Monday; the materials gatherer, Tuesday; the "voice monitor" (keep voices low), Wednesday; and so on. It helps to write each name and job on a card that you place at each Center daily.

Assessment Profile

The most useful type of evaluation or assessment of student learning is the Student Portfolio. A portfolio is a collection of student products and samples of work over time.

Each unit contains activities that result in products. Some of these products are: learning logs, literature responses, student-generated stories, poems, skits, songs, graphs, charts, illustrations, mobiles, murals, or dioramas, just to name a few. Not all samples fit into a folder. Keep a description or checklist that evaluates such products in your students' portfolio folders.

When you want proof of specific learning, interview each student or use some activity pages as assessment items. For specific facts or knowledge you require, selected response pages represent factual information. Student records and journal entries also demonstrate new knowledge. If you use some unit pages to assess learning, include a self-checking folder for your students.

Learning Center Guidelines

Learning Centers can be a valuable complement to your regular instructional activities; they provide another alternative for students to practice, explore, problems, and create. They also can help students to develop independence in managing their own learning.

Keep the following questions in mind as you begin to develop centers:

1. Does the Learning Center include a variety of materials which accommodate differences in learning styles?
2. Does it contain concrete, manipulative activities and paper/pencil activities? Is there a balance?
3. Does it contain some open-ended activities to encourage creative and original thinking?
4. Do the activities offer a variety of levels, to accommodate differences in ability? Are there activities at which all students can succeed? Are there challenging activities?
5. Are the activities self-checking and/or do the activities permit easy checking by you?
6. Does the student have a choice of activities to complete, or must the student do all the activities in the Center?
7. Does the Center include art, music, and literature?
8. Do the Center materials reflect diversity of gender, race, and language?
9. Are directions clearly stated and succinct?
10. Have you developed ways of keeping track of who has participated in the Center? Is the recordkeeping designed for the student to keep track of his/her progress in the Center?

11. Do the students have easy access to the materials?
12. Is the Center neatly constructed with appropriate printing/lettering?
13. Are the materials durable? Laminated? Have rounded edges?
14. Does the Center stimulate interest and further exploration?
15. Is there a unifying title or theme that appeals to students?

Setting Up a Center

Learning Centers will change with your content or theme. Before you begin a theme unit, decide which activities you will use; choose what to put in the Learning Centers accordingly. Put all materials in each Center that your students will need. The most essential supplies for each Learning Center are listed on the blackline master on the next page.

Essential Supplies for Learning Centers

Listening/Music Center

1. Tape recorder
2. Taped stories, poems, and songs
3. Supply of blank tapes
4. Headsets
5. CD Players
6. CDs
7. TV/VCR
8. Videos
9. Camcorder

Reading/Viewing Center

1. Relevant library books
2. Books on unit topics
3. Books made by students
4. Peer stories
5. Maps
6. Computer for reading files of work in progress, e-mail connections, and non-print media
7. CD-ROM drive and CDs (encyclopedia)
8. An Internet browser and other on-line connections
9. Printer
10. Film-strip Projector

Writing Center

1. Variety of papers: white, newsprint, scratch pads, legal pads, construction paper
2. Pens, pencils, crayons, felt-tip pens
3. Book-binding supplies
4. File folders
5. Paper Clips, stapler
6. Dictionary
7. Thesaurus
8. A list of idea starters
9. Expository and narrative writing samples
10. Pictures/Illustrations
11. Cartoon samples
12. Sample newspapers
13. Paragraph frame patterns
14. Computer for works in progress
15. Printer

Art Center

1. Construction paper
2. Scissors
3. Scotch Tape
4. String
5. Pens
6. Pencils
7. Colored chalk
8. Crayons
9. Tagboard
10. Poster board
11. Corrugated boxes
12. Mural/Bulletin board paper
13. Paint
14. Easel
15. Clay
16. Brads

Math/Science Center

1. Scales
2. Yardstick, rulers, measuring tape
3. Containers: measuring cups, spoons, bowls
4. Thermometers
5. Blocks
6. Graph paper
7. Aquarium
8. Egg cartons
9. Picture books and magazines
10. Cuisenaire rods
11. Math manipulatives

LEARNING CENTER ACTIVITIES

MAKE

1. Peep box of scene
2. Movie of paper or story
3. Mural of story
4. Puppet show
5. Picture of scene
6. Scale model
7. Map showing locations of story events
8. Book jacket with summary inside
9. Picture books
10. Fact/Data books
11. Illustrated journal
12. Flannel board story
13. Pictures of characters

DO

1. Dramatize a part
2. Pantomime a part
3. Show something new
4. Round-table discussion
5. Continue a story
6. Radio program
7. Eyewitness report
8. Give news flashes
9. Chalk-talk: tell a story
10. Perform a skit
11. Book chat

TELL

1. Summary of story
2. Interesting facts learned
3. Something new learned
4. Problem and solution
5. Interesting words and expressions
6. Story board

WRITE

1. Summary of data
2. Semantic web of information
3. Story
4. Skit
5. Acrostic poem
6. Newspaper article
7. Letters to authorities
8. Story starters
9. Tall tale
10. True/False book
11. Legend
12. Story board narrative

Learning Center Checklist

Presentation:

- ❑ unifying theme/art work
- ❑ colorful, attractively designed
- ❑ neatly assembled

Contents:

- ❑ age-appropriate, stage-appropriate
- ❑ variety of materials
- ❑ activities at varying levels (easy to challenging)
- ❑ incorporate various disciplines
- ❑ concrete/manipulative and paper/pencil activities
- ❑ some open-ended activities
- ❑ stimulates creative thought/interest
- ❑ free from stereotypes
- ❑ incorporates diversity
- ❑ provides for choice

Organization:

- ❑ clearly-stated directions
- ❑ directions appropriate for age/stage
- ❑ recordkeeping form included
- ❑ self-checking activities
- ❑ accessible materials

Construction:

- ❑ durable materials
- ❑ laminated
- ❑ rounded edges
- ❑ appropriate printing/lettering
- ❑ appropriate containers for activities

APPENDIX B

HOW TO MAKE AND USE BULLETIN BOARDS AND FILE FOLDERS

With limited space in classrooms today, you must find inventive ways to keep your students active and interested. The following two ideas may help you plan for the activities in these units.

Bulletin Boards

If your classroom has only one bulletin board, you may want to think about other ways to provide interactive boards. Large portable bulletin boards will provide two sides for work, and you can move them around the room as dividers. You can fold flannelboards and store them when not in use. You can paint large cardboard boxes from kitchen appliance or television stores; the four sides are usable as bulletin boards. Sides of file cabinets, doors, and spaces under chalkboards can also serve as working bulletin-board spaces. You can use window blinds for attaching materials, but be aware of the safety factor. Children's clothing can get caught if the blind mechanism begins to wind up.

While it may be too costly to laminate all the materials for the board, you will want to laminate any materials you expect to use again. If you are concerned about thumb tacks, velcro strips are good for mounting materials. Pellum, the material used for sewing suit interfacing, works well on flannelboards, and is cheaper than flannel or felt. Although adhesive tape will put things on the bulletin boards, it tends to tear the material when you take it off the boards. While there are commercial materials to use with the bulletin boards, you can be inventive in finding ways to accomplish the tasks of mounting materials on bulletin boards.

File Folders

You can make file folders from many different types of folders. Office supply stores have different forms to adapt for your own purposes. For instance, regular heavy paper folded in half can be fastened on both sides, to become an envelope for holding materials. Colored folders allow for color-coding materials into subjects.

Accordion-style folders allow for more materials in the pockets. The notebook folder has pockets on each side of the opened folder, or places to attach papers in fasteners, to allow for book writing. More expensive folders are transparent plastic; you can use them repeatedly for many different themes.

Parents who work in offices may give you used file folders they would normally discard. They may also be able to provide materials for the folders. If you tell parents your themes for the next few weeks, they may be willing to make folders for your class. Parents often think of creative activities that may not have occurred to you.

It is important to laminate file folders, so they will last after frequent use from many children. You can laminate with clear shelf paper found in grocery stores. Practice on some old papers, so you can learn to cover without creating air bubbles.

With a box or small crate for storage, your students can use these activities at their own desks or at a small classroom table. With boxes placed in Learning Centers, students will not waste time waiting in line to choose a file folder.

SAMPLE BULLETIN-BOARD/FILE FOLDER DISPLAY

Bulletin Board

TOPIC: Mystery Magnet

TEACHER:

1. Make sets of pictures and word cards of items that a magnet will and won't attract.
2. Place velcro strips on each card.
3. Make pockets for picture cards and word cards.
4. Place velcro strips in columns on the bulletin board.

STUDENTS:

1. Draw a card from each of the pockets.
2. Put each card under the appropriate side of the bulletin board.

Alternate Activity:
Students can expand this activity by adding more pictures to the collection.

WORD CARDS AND PICTURES:

1. tack
2. clip
3. hook
4. hat
5. can
6. ball
7. nail
8. coin
9. sock
10. football
11. shoe

File Folder

You can put this same project in a file folder. Place the cards on the corners of an open file folder. Paste the envelope to the back of the file folder, with the instructions on the front.

APPENDIX C

GLOSSARY

Accordion book: A book made by folding paper into an even number of sections.

Acrostic poem: A poem in which the first letter of each line forms a word, e.g.

Cuddly and cute
Always happy to see me
Tabby is her name.

Baggie book: A book made from putting several ziplock plastic bags together. Use any size ziplock plastic bags; cut plain or lined paper to fit into the bag. To bind, place the closed ends of the bags together, staple, then bind with colored plastic tape. Students can change contents of the book by removing pages and inserting new ones.

Bar graph: A graph which uses squares (or bars) to represent data.

Big Book: An oversized version of a book written with especially large text and illustrations. Print and illustrations can be easily seen by groups of children.

Bingo: A game for large or small groups, consisting of cards divided into sections. Each section contains a picture or word related to the theme being studied. You can also use a deck of cards with corresponding pictures or words. Each player has a card; the caller, using the large deck, calls the name of the picture or word. Students cover the corresponding picture or word on their cards. Play continues until a student has covered a row, column, or diagonal.

Chalk-talk: A technique for sharing a story which involves illustrating on the chalkboard while telling the story.

Collage: An artistic arrangement of various materials into a picture or design.

Concentration: A game involving matching pairs of card, similar to Memory; especially useful for developing visual discrimination, sight word recognition, or number facts. Students shuffle the Concentration deck and place the cards face down; students turn over two cards and try to match the cards; if they match the cards, they keep the pair and get another turn. The winner is the student with the most pairs.

Concept book: A book focusing on a single idea or concept. Examples: a concept book of colors, size, shapes, time, machines, apples, etc.

Concrete poem: A poem written in the shape of the object/idea being described.

Contrast poem: A poem which contains two parts that show different aspects of the same subject. Example:

<u>The Weather</u>
The sun bright and yellow/ Shines in the sky.
Rain pours down/ From darkened clouds.

Diorama: A three-dimensional, artistic reproduction often constructed in a container of some sort: for example, a shoe box representing an animal habitat.

Dominoes: A matching game; players match small rectangular game pieces by placing them end to end.

Fact/Myth book: A book with a fact written on one page and a corresponding myth (untruth) on the facing page.

Fingerplay: A short poem incorporating hand motions.

Flannelboard: A board, usually rectangular, covered on one side with flannel or similar material.

Flip book: A book consisting of several pages which, when flipped through quickly, shows a sequence of actions.

Go Fish: A card game involving collecting "books" of matching cards. Students shuffle and deal seven cards to each player; the remaining cards are placed in a pile in the center. Students in turn ask the next player to "Give me all your _____," trying to make a book consisting of three cards. If students have the requested card, they give it to the other player. If they do not, they say "Go Fish". The player who must "Go Fish" selects a card from the center pile. Play continues until the winning player goes out first or has the most books.

Haiku poem: A Japanese form that addresses the seasons. Contains three lines of five, seven, and five syllables, a total of 17 syllables.

Interlocking puzzles: Puzzles whose pieces connect; especially helpful in developing visual discrimination, sight word recognition, and number facts.

K-W-L chart: A strategy to determine prior knowledge about a topic (What I **K**now); interest in the subject (What I **W**ant to Know); and knowledge following instruction (What I **L**earned). At the beginning of a unit, the teacher records what the students already know about the topic, then asks what they want to know. The partially completed chart hangs in the classroom; at the end of the unit, the teacher records what students have learned.

Language Experience: Students participate in some kind of experience, either as a group or individually, and discuss the experience; then the student(s) dictate a story related to the experience. After hearing the story, students can do a variety of literacy activities with it: matching words in the story, illustrating words they recognize from the story, matching phrases, and so on.

Learning Log: A journal where students explore information they are studying.

Observation journal: A journal in which students record observed data.

Pictograph: A graph which uses pictures to display data.

Pocket chart: A large chart made of cardboard or plastic, which contains sections for cards or sentence strips.

Rebus recipe: A recipe which uses pictures instead of words.

Rebus story: A story which uses both pictures and words.

Rebus web: A brainstorming technique using pictures to represent ideas.

Semantic web: A brainstorming technique which uses words to represent ideas.

Sentence frame: Partial sentence used to prompt student writing, e.g., I like bears because _____. When I see _____, I feel _____.

Sequence strips: Strips of paper containing portions of a story; individual strips can be combined into a sequence.

Shape books: Books in the form of the topic being written about; e.g., books in the shape of animals, insects, fruits, vegetables.

Shared Reading Time: A time during the school day when the teacher reads to the students; as students become fluent readers, they can read to each other.

Shoebox sorter: A classification container. Partition a shoebox into sections according to the number of categories desired. Make corresponding cards for the theme being studied, that students can sort into the shoebox.

Simon Says: A game of following directions. Caller gives directions; some begin with "Simon Says"; others do not. Students perform only those actions beginning with "Simon Says"; if they follow the directions that don't begin with "Simon Says", they are out of the game. To keep them involved, let the "out" students help you catch others who follow the direction without "Simon Says."

Single character cut-out: A child-size picture of a character from a story. It shows the body, but the face is cut out. Students hold the character cut-out in front of their faces while they retell or dramatize the story.

Storyboard: A retelling technique which uses pictures only; students illustrate portions of the story, then arrange the portions sequentially.

Tangrams: A set of seven varying shapes (five triangles, one square, and one parallelogram) are used to make many different forms.

Theme box: A container for props, costumes, and equipment pertaining to a specific topic or theme; useful for stimulating dramatic play.

Think-Pair-Share: Teacher pairs students to think about a concept and share their ideas on it.

Transparency story: Acetates (overhead transparencies) and erasable marking pens help students retell a story. Teacher writes the text from the story on the acetates; students draw a picture to accompany the text; then they sequence the illustrated portions and show them to the class with the overhead projector. As students become more fluent, they can write the text for illustrations drawn by the teacher.

Venn diagram: A graphic organizer consisting of two intersecting circles; used for comparing similarities and differences.

Web: A balloon drawn on the chalkboard that contains words, phrases, or images to be discussed and related.

Word bank: A collection of words for students to read. Write words on index cards and keep them in small containers (banks).

Word Wall: A designated wall in the classroom where words are posted that interest students. May relate to the theme being studied; useful to help students with spelling as they compose their own stories.

APPENDIX D

How to Make a Book

1. Select the type of book: traditional, modern, accordion, baggie, hinged cover, shape, pop-up.

2. Include these essential components:
   front cover
   title page
   dedication page (optional)
   story/content
   about the authors (optional)
   back cover

3. Attach book pages. The simplest way to attach pages is by stapling; however, there are other alternatives. Office supply stores offer a wide range of fasteners; you may find yarn, ribbon, string, or shoe laces at sewing stores. Pages may be glued to a backing of construction paper, then stapled together and covered. Pages may also be folded and glued back-to-back or stitched down the center. If your school has a bookbinding machine, you may attach the pages using spiral binders.

4. Attach cover. Choose materials that are durable or can be laminated. Possibilities are: tag board, mat board, cardboard, construction paper, cloth, wrapping paper, wallpaper (usually available free from paint/wallpaper stores), and contact paper. A variety of tapes for binding are also available: cellophane, masking, cloth, duct, or colored vinyl.

5. Helpful hints
   - Allow a margin on the left side of the paper before children start writing the story.
   - Cut cover pieces slightly larger than the writing paper; 1/4- to 1/2-inch is usually a good idea.
   - Sometimes you may wish to give a pre-assembled book to students; or you may want to give them individual sheets of paper. The latter is a good idea for children just beginning the process, since you want them to succeed in their story-writing endeavor.
   - It is easier if there is a straight edge on the side to be bound.

For additional ideas on making books, these resources might be helpful:

Evans, Joy and Jo E. Moore. *Making Big Books with Children.*
Evans, Joy, et al. *Making Seasonal Big Books with Children.*

APPENDIX E

TEACHER RESOURCES

Bittinger, Gayle, ed. *1001 Teaching Props: Simple Props to Make for Working with Young Children*

Boardman, Eunice. *Dimensions of Musical Thinking*

Johnson, Judi, ed. *The Educational Software Preview Guide*

Carle, E. *Animals, Animals*

Scholastic Books. *Poetry Place Anthology*

Neill, Shirley and George. *Only the Best: The Annual Guide to the Highest-Rated Educational Software: Preschool-Grade 12*

Prelutsky, Jack. *The New Kid on the Block*

Schiller, Pam and Moore, Thomas. *Where is Thumbkin?: Over 500 Activities to Use with Songs You Already Know*

Silverstein, Shel. *Where the Sidewalk Ends*

Wilmes, L. and More, D. *Everyday Circle Times*

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Dinosaurs • Beavers

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